

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

Claim 1 (currently amended): A method for enhancing *in situ* bioremediation of a nonaqueous halogenated solvent in ground water comprising adding to the ground water an amount of an electron donor sufficient for a halo-respiring microbe in the ground water to use the nonaqueous halogenated solvent as an electron acceptor, thereby reductively dehalogenating the nonaqueous halogenated solvent into innocuous compounds, wherein said electron donor comprises a mixture of (a) a member selected from the group consisting of C₂-C₄ carboxylic acids and salts thereof, C₂-C₄ hydroxy acids and salts thereof, and mixtures thereof, and (b) a member selected from the group consisting of esters of C₂-C₄ carboxylic acids, esters of C₂-C₄ hydroxy acids, and mixtures thereof ~~enhances mass transfer of the nonaqueous halogenated solvents into solution.~~

Claims 2-5 (canceled)

Claim 6 (currently amended): The method of claim ~~1~~ 5 wherein said electron donor comprises a mixture ~~is a member selected from the group consisting of~~ lactic acid, ~~salts or a salt thereof; and an ester of lactic acid~~ lactate esters, and mixtures thereof.

Claim 7 (currently amended): The method of claim 6 wherein said ~~salts~~ salt of lactic acid ~~are~~ is a member selected from the group consisting of sodium lactate, potassium

lactate, lithium lactate, ammonium lactate, calcium lactate, magnesium lactate, manganese lactate, zinc lactate, ferrous lactate, aluminum lactate, and mixtures thereof.

Claims 8-10 (canceled)

Claim 11 (currently amended): The method of claim 1 wherein said electron donor comprises a mixture of sodium lactate and ethyl lactate.

Claims 12-13 (canceled)

Claim 14 (original): The method of claim 1 wherein said microbe is indigenous to the ground water.

Claim 15 (original): The method of claim 1 further comprising adding the halo-respiring microbe to the ground water.

Claims 16-19 (canceled)

Claim 20 (currently amended): A method for enhancing bioremediation of a nonaqueous chlorinated solvent in ground water comprising adding to the ground water an amount of an electron donor sufficient for a chloro-respiring microbe to use the nonaqueous chlorinated solvent as an electron acceptor, thus reductively dechlorinating the nonaqueous chlorinated solvent into innocuous compounds, wherein said electron donor comprises 3% to 60% by weight of a member selected from the group consisting of C₂-C₄ carboxylic acid and salts thereof, C₂-C₄ hydroxy acids and salts thereof, and mixtures thereof ~~enhances mass transfer of the nonaqueous chlorinated solvents into solution.~~

Claims 21-24 (canceled)

Claim 25 (currently amended): The method of claim ~~24~~ 20 wherein said electron donor is ~~a member selected from the group consisting of~~ comprises lactic acid, ~~salts or a salt thereof, lactate esters, and mixtures thereof.~~

Claim 26 (currently amended): The method of claim 25 wherein said ~~salts~~ salt of lactic acid ~~are~~ is a member selected from the group consisting of sodium lactate, potassium lactate, lithium lactate, ammonium lactate, calcium lactate, magnesium lactate, manganese lactate, zinc lactate, ferrous lactate, aluminum lactate, and mixtures thereof.

Claims 27-28 (canceled)

Claim 29 (currently amended): The method of claim ~~28~~ 20 wherein said electron donor comprises a mixture of sodium lactate and ethyl lactate.

Claim 30 (canceled)

Claim 31 (original): The method of claim 20 wherein said microbe is indigenous to the ground water.

Claim 32 (original): The method of claim 20 further comprising adding the chloro-respiring microbe to the ground water.

Claims 33-35 (canceled)

Claim 36 (currently amended): A method for enhancing mass transfer of a nonaqueous halogenated solvent present in a nonaqueous residual source of contamination in ground water, said ground water comprising an aqueous phase, into said aqueous phase comprising adding to said ground water an effective amount of a composition that donates electrons for microbe-mediated reductive dehalogenation of said nonaqueous halogenated solvent into innocuous compounds and functions as a surfactant or co-solvent for solubilizing said nonaqueous halogenated solvent, wherein said composition comprises a mixture of (a) a member selected from the group consisting of C₂-C₄ carboxylic acid and salts thereof, C₂-C₄ hydroxy acids and salts thereof, and mixtures thereof and (b) a member selected from the group consisting of esters of C₂-C₄ carboxylic acids, esters of C₂-C₄ hydroxy acids, and mixtures thereof.

Claims 37-39 (canceled)

Claim 40 (currently amended): The method of claim 39 ~~39~~ 36 wherein said composition ~~is a member selected from the group consisting~~ comprises a mixture of lactic acid ; ~~salts or a salt thereof ; and a lactate ester esters, and mixtures thereof.~~

Claim 41 (currently amended): The method of claim 40 wherein said ~~salts~~ salt of lactic acid ~~are~~ is a member selected from the group consisting of sodium lactate, potassium lactate, lithium lactate, ammonium lactate, calcium lactate, magnesium lactate, manganese lactate, zinc lactate, ferrous lactate, aluminum lactate, and mixtures thereof.

Claims 42-43 (canceled)

Claim 44 (currently amended): The method of claim ~~43~~ 36 wherein said composition comprises a mixture of sodium lactate and ethyl lactate.

Claim 45 (canceled)

Claim 46 (original): The method of claim 36 wherein said microbe is indigenous to the ground water.

Claim 47 (original): The method of claim 36 further comprising adding a chloro-respiring microbe to the ground water for mediating said reductive dehalogenation.

Claim 48-50 (canceled)

Claim 51 (new): The method of claim 1 wherein said electron donor comprises 3% to 60% by weight of the member selected from the group consisting of C₂-C₄ carboxylic acids and salts thereof, C₂-C₄ hydroxy acids and salts thereof, and mixtures thereof.

Claim 52 (new): The method of claim 1 wherein said electron donor comprises a mixture of propionic acid or salt thereof, lactic acid or salt thereof, and an ester of lactic acid.

Claim 53 (new): The method of claim 52 wherein said ester of lactic acid comprises ethyl lactate.

Claim 54 (new): The method of claim 1 wherein said electron donor comprises a mixture of butyric acid or salt thereof, lactic acid or salt thereof, and an ester of lactic acid.

Claim 55 (new): The method of claim 54 wherein said ester of lactic acid comprises ethyl lactate.

Claim 56 (new): The method of claim 1 wherein said electron donor comprises a mixture of propionic acid and ethyl lactate.

Claim 57 (new): The method of claim 1 wherein said electron donor comprises a mixture of butyric acid and ethyl lactate.

Claim 58 (new): The method of claim 1 wherein said electron donor comprises 0.1 to 10% by weight of the member selected from the group consisting of esters of C₂-C₄ carboxylic acids, esters of C₂-C₄ hydroxy acids, and mixtures thereof.

Claim 59 (new): The method of claim 20 wherein said member selected from the group consisting of C₂-C₄ carboxylic acid and salts thereof, C₂-C₄ hydroxy acids and salts thereof, and mixtures thereof is a mixture of propionic acid or a salt thereof and lactic acid or a salt thereof.

Claim 60 (new): The method of claim 20 wherein said member selected from the group consisting of C₂-C₄ carboxylic acid and salts thereof, C₂-C₄ hydroxy acids and salts thereof, and mixtures thereof is a mixture of butyric acid or a salt thereof and lactic acid or a salt thereof.

Claim 61 (new): The method of claim 20 wherein said member selected from the group consisting of C₂-C₄ carboxylic acid and salts thereof, C₂-C₄ hydroxy acids and salts thereof, and mixtures thereof is propionic acid or a salt thereof.

Claim 62 (new): The method of claim 20 wherein said member selected from the group consisting of C₂-C₄ carboxylic acid and salts thereof, C₂-C₄ hydroxy acids and salts thereof, and mixtures thereof is butyric acid or a salt thereof.

Claim 63 (new): The method of claim 20 wherein said electron donor further comprises a member selected from the group consisting of esters of C₂-C₄ carboxylic acids, esters of C₂-C₄ hydroxy acids, and mixtures thereof.

Claim 64 (new): The method of claim 63 wherein said member selected from the group consisting of esters of C₂-C₄ carboxylic acids, esters of C₂-C₄ hydroxy acids, and mixtures thereof is an ester of lactic acid.

Claim 65 (new): The method of claim 64 wherein said ester of lactic acid is ethyl lactate.

Claim 66 (new): The method of claim 63 wherein said member selected from the group consisting of esters of C₂-C₄ carboxylic acids, esters of C₂-C₄ hydroxy acids, and mixtures thereof is present in an amount of 0.1 to 10% by weight.

Claim 67 (new): The method of claim 36 wherein said electron donor comprises 3% to 60% by weight of the member selected from the group consisting of C₂-C₄ carboxylic acid and salts thereof, C₂-C₄ hydroxy acids and salts thereof, and mixtures thereof.

Claim 68 (new): The method of claim 36 wherein said electron donor comprises a mixture of propionic acid or salt thereof, lactic acid or salt thereof, and an ester of lactic acid.

Claim 69 (new): The method of claim 68 wherein said ester of lactic acid comprises ethyl lactate.

Claim 70 (new): The method of claim 36 wherein said electron donor comprises a mixture of butyric acid or salt thereof, lactic acid or salt thereof, and an ester of lactic acid.

Claim 71 (new): The method of claim 70 wherein said ester of lactic acid comprises ethyl lactate.

Claim 72 (new): The method of claim 36 wherein said electron donor comprises a mixture of propionic acid or salt thereof and ethyl lactate.

Claim 73 (new): The method of claim 36 wherein said electron donor comprises a mixture of butyric acid or a salt thereof and ethyl lactate.

Claim 74 (new): The method of claim 36 wherein said electron donor comprises 0.1 to 10% by weight of the member selected from the group consisting of esters of C₂-C₄ carboxylic acids, esters of C₂-C₄ hydroxy acids, and mixtures thereof.

Claim 75 (new): A method for enhancing mass transfer of a nonaqueous halogenated solvent present in a nonaqueous residual source of contamination in ground water, said ground water comprising an aqueous phase, into said aqueous phase comprising adding to said ground water an effective amount of a composition that donates electrons for microbe-mediated reductive dehalogenation of said nonaqueous halogenated solvent into innocuous compounds and functions as a surfactant or co-solvent for solubilizing said nonaqueous halogenated solvent, wherein said composition comprises 3% to 60% by weight of a member

selected from the group consisting of C₂-C₄ carboxylic acid and salts thereof, C₂-C₄ hydroxy acids and salts thereof, and mixtures thereof.

Claim 76 (new): The method of claim 75 wherein said electron donor comprises lactic acid or a salt thereof.

Claim 77 (new): The method of claim 76 wherein said salt of lactic acid is a member selected from the group consisting of sodium lactate, potassium lactate, lithium lactate, ammonium lactate, calcium lactate, magnesium lactate, manganese lactate, zinc lactate, ferrous lactate, aluminum lactate, and mixtures thereof.

Claim 78 (new): The method of claim 75 wherein said electron donor comprises a mixture of sodium lactate and ethyl lactate.

Claim 79 (new): The method of claim 75 wherein said member selected from the group consisting of C₂-C₄ carboxylic acid and salts thereof, C₂-C₄ hydroxy acids and salts thereof, and mixtures thereof is a mixture of propionic acid or a salt thereof and lactic acid or a salt thereof.

Claim 80 (new): The method of claim 75 wherein said member selected from the group consisting of C₂-C₄ carboxylic acid and salts thereof, C₂-C₄ hydroxy acids and salts thereof, and mixtures thereof is a mixture of butyric acid or a salt thereof and lactic acid or a salt thereof.

Claim 81 (new): The method of claim 75 wherein said electron donor further comprises a member selected from the group consisting of esters of C₂-C₄ carboxylic acids, esters of C₂-C₄ hydroxy acids, and mixtures thereof.

Claim 82 (new): The method of claim 81 wherein said member selected from the group consisting of esters of C₂-C₄ carboxylic acids, esters of C₂-C₄ hydroxy acids, and mixtures thereof is an ester of lactic acid.

Claim 83 (new): The method of claim 82 wherein said ester of lactic acid is ethyl lactate.

Claim 84 (new): The method of claim 81 wherein said member selected from the group consisting of esters of C₂-C₄ carboxylic acids, esters of C₂-C₄ hydroxy acids, and mixtures thereof is present in an amount of 0.1 to 10% by weight.